

**ABSTRACT**

A the end of a waveguide 6 to which a light-emitting element 2 is optically coupled, is provided a spot-size conversion region 12 configured by reducing a width or a thickness of the waveguide, or both thereof all the more in the light-emitting element 2 side, and at the end of a waveguide 7 to which an photoreceptive element 9 is optically coupled is provided a spot-size conversion region 13 configured by increasing a width or a thickness of the waveguide, or both thereof all the more in the photoreceptive element 9 side.

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